COLORADO DEPARTMENT OF TRANSPORTATION

STAFF BRIDGE

BRIDGE DESIGN MANUAL

Subsection: Table of Contents Effective: July 24, 2012 Supersedes: May 1, 2009

TABLE OF CONTENTS

SECTION	1 GENERAL POLICY AND PROVISIONS	* *	*
1.1	CDOT BRIDGE DESIGN MANUAL	05/01/92	3
1.1.1	General		
1.1.2	Distribution and Maintenance		
1.1.3	Revisions		
1.1.4	Supplemental Staff Bridge Publications		
	A. Staff Bridge Engineer Memorandums		
	B. CDOT Bridge Detailing Manual C. CDOT Staff Bridge Worksheets		
	D. Bridge Rating Manual		
	E. Project Special Provisions		
	F. Staff Bridge BRIAR/BMS Records and Publications		
1.2	CDOT STAFF BRIDGE WORKSHEETS	05/01/92	2
1.2.1	General		
1.2.2	Distribution and Maintenance		
1.2.3	Distribution and Maintenance Revisions PROJECT SPECIAL PROVISIONS		
1.3	PROJECT SPECIAL PROVISIONS	05/01/92	2
	General		
	Distribution and Maintenance		
1.3.3	Revisions		
SECTION	2 CLEARANCES AND GENERAL FEATURES OF DESIGN		
2.1	BRIDGE RAILS	05/01/92	2
2.1.1	Bridges Carrying Federal-Aid Routes		
2.1.2	Bridges Over, Without Direct Access by, a		
0 1 0	Federal-Aid Route		
2.1.3	2 ,		
2.2	Federal-Aid Route PEDESTRIAN BRIDGES AND PEDESTRIAN WALKWAYS	11/01/99	4
	Reference	11/01/99	4
	Width and Clearance		
2.2.3			
2.2.4	Lighting		
2.2.5	Pedestrian Railings		
2.2.6	Chain Link Fence		
2.2.7	Bicycle Railing		
2.2.8			
2.3	BRIDGE TYPICAL SECTIONS AND MINIMUM CLEARANCES	05/01/92	8
2.4	RAILROAD CLEARANCES	08/01/02	9
2.4.1	Revision		
2.4.2	References		
2.4.3 2.5	General PROTECTIVE SCREENING, SPLASHBOARDS, AND	07/20/88	2
۷. ۶	DRAINS OVER RAILROADS	01/20/00	4
2.6	WIDTH OF ABUTMENT BERM	12/12/88	1
2.7	ACCESS FOR INSPECTION	05/01/92	3
2.7.1	General		
2.7.2	Steel and Concrete Box Girders		

^{*} Number of pages.

^{**} Effective date, mo/day/yr

3.1.1 General 3.1.2 Construction 3.1.3 Seismic 3.1.4 Superstructure Buoyancy 3.2 COLORADO PERMIT VEHICLE 3.3 COLLISION LOAD (CT) 3.3.1 New Structures 3.3.2 Temporary Works 3.3.2 Temporary Works 3.3.3 Existing Structures SECTION 4 FOUNDATIONS 4.1 PILING 4.1.1 General 4.1.2 Spacing 4.1.3 Orientation 4.2 CAISSON DEBIGN SECTION 5 RETAINING WALLS 5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Types and Selection Study Report C. Section Study Report C. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Meterial of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCECURENTS OF PROPRIETARY WALL APPROVAL 10/01/91 5	,	July 24, 2012	Table of Contents	Page 2 of 6	
3.1.1 General 3.1.2 Construction 3.1.3 Seismic 3.1.4 Superstructure Buoyancy 3.2 COLORADO PERMIT VEHICLE 3.3 COLLISION LOAD (CT) 3.3.1 New Structures 3.3.2 Temporary Works 3.3.2 Temporary Works 3.3.3 Existing Structures SECTION 4 FOUNDATIONS 4.1 PILING 4.1.1 General 4.1.2 Spacing 4.1.3 Orientation 4.2 CAISSON DEBIGN SECTION 5 RETAINING WALLS 5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Types and Selection Study Report C. Section Study Report C. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Meterial of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCECURENTS OF PROPRIETARY WALL APPROVAL 10/01/91 5	SECTION	3 DESIGN CRITER	RIA AND LOADS		
3.1.2 Construction 3.1.3 Seismic 3.1.4 Superstructure Buoyancy 3.2 COLORADO PERMIT VEHICLE 3.3.3 COLISION LOAD (CT) 3.3.1 New Structures 3.3.2 Temporary Works 3.3.3 Existing Structures SECTION 4 FOUNDATIONS 4.1 PILING 4.1.1 General 4.1.2 Spacing 4.1.3 Orientation 4.2 CAISSON DESIGN SECTION 5 RETAINING WALL DESIGN REQUIREMENTS 5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 EARTH Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CODOT FROCEDURES OF PROFERTERY WALL APPROVAL 10/01/91 5	3.1		Y	11/05/91	2
3.1.4 Superstructure Buoyancy 3.2 COLORADO PERMIT VEHICLE 3.3.3 COLLISTON LOAD (CT) 3.3.3 New Structures 3.3.2 Temporary Works 3.3.3 Existing Structures SECTION 4 FOUNDATIONS 4.1 PILING 4.1.1 General 4.1.2 Spacing 4.1.3 Orientation 4.2 CAISSON DESIGN SECTION 5 RETAINING WALL DESIGN REQUIREMENTS 5.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CODOT PROCEDURES OF PROFERETARY WALL APPROVAL 10/01/91 5					
3.1.4 Superstructure Buoyancy 3.2 COLORADO PERMIT VEHICLE 3.3 COLLISION LOAD (CT) 3.3.1 New Structures 3.3.2 Temporary Works 3.3.3 Existing Structures SECTION 4 FOUNDATIONS 4.1 PILING 4.1.1 General 4.1.2 Spacing 4.1.3 Orientation 4.2 CAISSON DESIGN SECTION 5 RETAINING WALL S 5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Folymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CODOT PROCEDURES OF PROFERTERTW WALL APPROVAL 10/01/91 5					
3.2 COLORADO PERMIT VENICLE 3.3.2 COLLISION LOAD (CT) 3.3.1 New Structures 3.3.2 Temporary Works 3.3.2 Temporary Works 3.3.3 Existing Structures SECTION 4 FOUNDATIONS 4.1 PILING 4.1.1 General 4.1.2 Spacing 4.1.2 CAISSON DESIGN SECTION 5 RETAINING WALLS 5.1 EARTH RETAINING WALLS 5.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CODT FROCEDURES OF PROPERTERTY WALL APPROVAL 10/01/91 5					
3.3.1 COLLISION LOAD (CT) 3.3.2 Temporary Works 3.3.2 Temporary Works 3.3.3 Existing Structures SECTION 4 FOUNDATIONS 4.1 PILING 4.1.1 General 4.1.2 Spacing 4.1.3 Orientation 4.2 CAISSON DESIGN SECTION 5 RETAINING WALLS 5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Foting Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Teacing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 COOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5				44/04/00	_
3.3.1 New Structures 3.3.2 Temporary Works 3.3.3 Existing Structures SECTION 4 FOUNDATIONS 4.1 PILING 4.1.1 General 4.1.2 Spacing 4.1.3 Orientation 4.2 CAISSON DESIGN 5.1 EARTH RETAINING WALLS 5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 COOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5					
3.3.2 Temporary Works 3.3.3 Existing Structures SECTION 4 FOUNDATIONS 4.1 PILING 4.1.1 General 4.1.2 Spacing 4.1.3 Orientation 4.2 CAISSON DESIGN SECTION 5 RETAINING WALLS SECTION 5 RETAINING WALL DESIGN REQUIREMENTS 5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5		•	')	05/01/09	5
SECTION 4 FOUNDATIONS 4.1 PILING 4.1.1 General 4.1.2 Spacing 4.1.3 Orientation 4.2 CAISSON DESIGN SECTION 5 RETAINING WALLS 5.1 EARTH RETAINING WALLS 5.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5					
### SECTION 4 FOUNDATIONS 4.1 PILING 4.1.1 General 4.1.2 Spacing 4.1.3 Orientation 4.2 CAISSON DESIGN ### SECTION 5 RETAINING WALLS 5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design and Design Alternatives D. Objectives and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5					
4.1. PILING 4.1.1 General 4.1.2 Spacing 4.1.3 Orientation 4.2 CAISSON DESIGN Od/01/91 1 SECTION 5 RETAINING WALLS 5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5	3.3.3	Existing Structure	es s		
4.1.1 General 4.1.2 Spacing 4.1.3 Orientation 4.2 CAISSON DESIGN SECTION 5 RETAINING WALLS 5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5	SECTION	4 FOUNDATIONS			
4.1.2 Spacing 4.1.3 Orientation 4.2 CAISSON DESIGN SECTION 5 RETAINING WALLS 5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Folymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction	4.1			11/02/87	2
4.1.3 Orientation 4.2 CAISSON DESIGN 04/01/91 1 SECTION 5 RETAINING WALLS 5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 10/01/91 6 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction Concrete Cantilever Retaining Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5					
4.2 CAISSON DESIGN SECTION 5 RETAINING WALLS 5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5	4.1.2	Spacing			
5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5				04/01/01	1
5.1 EARTH RETAINING WALL DESIGN REQUIREMENTS 5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5	4.2	CAISSON DESIGN		04/01/91	Τ
5.1.1 General Requirements for All Wall Types A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction	SECTION	5 RETAINING WAL	LS		
A. General B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction	5.1		-	10/01/91	6
B. Wall Types and Selection Study Report C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5	5.1.1	-	ts for All Wall Types		
C. Wall Default Design and Design Alternatives D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL					
D. Objectives and Constraints of Retaining Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL					
Wall Design Project E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5				<i>r</i> es	
E. Geology Reports and Request of Additional Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL		-	——————————————————————————————————————		
Boring Logs F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL		=			
F. Wall Design Based on Plane Strain Condition G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL			s and Request of Additional	L	
G. Bridge Abutment Wall H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5		2 2	1 71 01 1 0 111		
H. Quality Assurance of Wall Design and Construction 5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5		=		Lon	
5.1.2 Concrete Cantilever Retaining Wall A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5		-			
A. Top of Wall B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL	E 1 0			struction	
B. Footing Sloped or Stepped C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5	3.1.2		r Recalling wall		
C. Footing Pressure D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5		=	or Stenned		
D. Footing Cover E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91					
E. Gutter F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5		_			
F. Equivalent Fluid Weight 5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5		-			
5.1.3 Earth Wall (M.S.E. Walls and Soil Nailing Walls) A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5			id Weight		
A. Construction and Erection B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5	5.1.3			11s)	
B. Wall Facing C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5	0.1.0		=		
C. Impervious Membrane D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5					
D. Drainage Blanket E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5			brane		
E. Fill Material of Metallic Reinforced Zone F. Corrosion Protection of Carbon Steel Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5					
Reinforcements G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5		-		9	
G. Limitations on Soil Nailing Wall H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5		F. Corrosion Prot	ection of Carbon Steel		
 H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5 		Reinforcements			
 H. Durability of Polymeric Reinforcements I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5 		G. Limitations on	Soil Nailing Wall		
 I. Fill Material of Polymeric Reinforced Zone J. Quality Assurance of Construction CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5 					
<pre>J. Quality Assurance of Construction 5.2 CDOT PROCEDURES OF PROPRIETARY WALL APPROVAL 10/01/91 5</pre>				ne	
5.3 EARTH RETAINING WALL CLASSIFICATION 10/01/91 3	5.2	——————————————————————————————————————		10/01/91	5
	5.3	EARTH RETAINING WA	LL CLASSIFICATION	10/01/91	3

J	Tuly 24, 2012	Table of Contents	Page 3 of 6	
5.4 5.4.1 5.4.2 5.4.3	Spatial Constraint Behavior Constrain Economic Considera	ts tions	05/01/92	9
5.4.4	Wall Designs	Used on Selected Conceptua	al	
5.4.5 5.5		Evaluation Factors TH RETAINING WALL TYPE	10/01/91	5
5.6 5.7	EARTH RETAINING WA	LL MEASUREMENT AND PAYMENT ONSTRUCTION OF ALTERNATE	10/01/91 10/01/91	1 2
5.8 5.9	REQUIREMENTS FOR A	SSIGNING ALTERNATE WALLS OF A CANTILEVER RETAINING N	05/01/92 10/01/91	3 7
SECTION	6 CULVERTS			
SECTION	7 SUBSTRUCTURES			
7.1 7.1.1 7.1.2 7.1.3	WINGWALLS FOR U-TY Wingwall Design Le Wingwall Foundatio Wingwall Design Lo	ngth n Support	11/02/87	4
7.2 7.3	INTEGRAL ABUTMENTS USE OF APPROACH SL		11/01/99 05/01/92	
7.4	REINFORCED SOIL AB		11/01/11	
SECTION	8 REINFORCED COI	NCRETE		
	REINFORCEMENT Revision General Epoxy Coated Reinf A. Background B. Policy C. Bond and Basic Coated Reinfor	Development Length of Epox	06/20/89 «y	6
8.2 8.2.1 8.2.2 8.2.3 8.2.4	D. Splice Lengths CONCRETE BRIDGE DE General Waterproofing Memb Permanent Deck For Overhangs	for Epoxy Coated Reinforci CKS rane	ing 12/27/91	8
8.2.5 8.3	Design CONCRETE DECKS FOR BOX GIRDERS	DOUBLE TEES AND PRECAST	12/27/91	2
8.3.1 8.3.2 8.4 8.4.1	-	ees and Precast Box Girders e Tees and Precast Box Gird		1
8.4.2 8.5 8.5.1		NG DETAILS for C.I.P. Girders	12/31/87	3
8.5.2 8.6	Pier Caps for Stee SPIRALS FOR ROUND	l and Precast Girders COLUMNS	05/01/92	1

J	Tuly 24, 2012	Table of Contents	Page 4 of 6	
SECTION	SECTION 9 PRESTRESSED CONCRETE			
	DESIGN OF PRESTRES General Cast-in-Place or P		07/01	./12 16
9.1.3 9.2	Precast or Pretens		11/04	/91 1
9.3	PRECAST GIRDER DES	IGN AIDS	06/01	./98 5
SECTION	10 STEEL STRUCTU	JRES		
10.1.2 10.1.3 10.1.4 10.1.5 10.1.6 10.1.7 10.1.8 10.1.9	Welded Girders Fatigue Stiffeners Bearing Stiffeners Splices Connections		11/05	5/91 12
10.1.10 10.1.11 10.2 10.2.1 10.2.2	Control Dimension BRACING FOR STEEL General Diaphragms	GIRDERS	11/05	5/91 4
10.2.3 10.3 10.4	STRUCTURAL STEEL 1	ements for Box Girders FRACTURE CRITICAL MEMBERS FRUCTURAL STEEL DESIGNATION	•	5/91 3 8/89 1
	13 TIMBER STRUCT	TURES		
14.1 14.1.1 14.1.2 14.1.3	BRIDGE BEARING FORD Downward Force Transverse Force Longitudinal Force Uplift Force	CES	01/01	./90 1
14.1.5 14.2 14.3 14.4	Other Forces BEARING DEVICE TYPE BEARING DEVICE TYPE BEARING DEVICE TYPE	E II AND TYPE V	08/01 05/20 10/31	/91 1
SECTION 15 JOINTS				
15.1 15.2 15.3		ION JOINTS OR 0" TO 4" EXPANSION DEVICE OR MODULAR EXPANSION DEVICE		2/88 5
SECTION 16 HYDRAULICS AND DRAINAGE				
16.1 16.2 16.3	BRIDGE DRAINAGE DECK DRAINS SCOUR		11/01 12/27 05/01	//91 1

July 24, 2012		Table of Contents	Page !	of 6	
SECTION 17 UTILITIES, LIGHTING, AND SIGNS					
17.1 17.2 17.3 17.3.1 17.3.2	TELEPHONE CONDUITS UTILITY BLOCKOUTS BRIDGE LIGHTING Top Mounted Underneath			03/20/89 04/10/00 01/01/90	1 2 1
17.4 17.4.1 17.4.2 17.4.3	SIGNS Project Procedures Minimum Design Req Bridge-Mounted Sig A. Design Conside B. Geometrics C. Aesthetics D. Sign Placement E. Installation	uirements n Structures rations		03/06/00	3
	18 QUANTITIES AI	ND COST ESTIMATING		11 /01 /00	0
18.1.2 18.1.3 18.1.4	COST ESTIMATING General Conceptual Stage Preliminary Plan S Design Stage			11/01/90	2
18.2.2 18.2.3 18.2.4	Bid Proposal Stage COMPUTATION OF QUA Responsibilities Procedure for Comp Data Source Accuracy	NTITIES		01/01/90	2
18.3	Format BID ITEMS AND QUAN Bid Items and Pay Quantities and Qua	Units		03/20/89	1
		EDURES AND PROCESSES		/ /	
19.1 19.1.1		ewer		08/01/02	10
19.1.2	Project Scoping fo A. Scoping B. Schedule and W C. Project Survey Major Structure Pr A. Structure Data B. Structure Layo C. Structure Sele	orkhour Estimates Request eliminary Design Collection ut and Type Study			
	D. Foundation Inve E. FIR	-			

·	July 24, 2012	Table of Contents	Page 6 of 6
19 1 4	Major Structure Fi	nal Design	
10.1.1	=	al Design & Preparation of	Plans and Specifications
		sign, Detail, and Quantity	
	C. FOR	sign, becarr, and guantity	CITCON
	D. Bridge Rating	and Field Packages	
	E. Final Design S		
19.1.5	Major Structure Co		
	A. Assisting the		
	B. Outside Inquir	2	
	C. Contractor Dra		
	D. As Constructed		
19.1.6	Standards for the	Design and Construction of	Structures
	A. Standards Publ	ished by Staff Bridge	
	B. Standards Publ	ished Outside of Staff Brid	lge
	C. Standards Publ	ished Outside of CDOT	
19.1.7	Major Project Mile	stones	
19.1.8	Definitions		
19.2	CONTRACTOR DRAWING	SUBMITTALS	06/01/98 3
19.3	SELECTING BRIDGES	FOR REHABILITATION OR	05/01/92 1
	REPLACEMENT		
19.4		HYDRAULICS DESIGN UNIT	05/01/92 2
19.5	OVERLAYS		04/10/00 1
19.6		CTS, DEVELOPER PROJECTS & A	ACCESS 07/01/12 2
	PERMITS		